

THAT WHICH IS CLAIMED IS:

1. An audio amplifier device comprising:
a power supply including an output for
providing a supply voltage;
a voltage divider connected to the output of
5 said power supply for providing a divided supply
voltage;
an audio amplifier comprising a supply
voltage rejection circuit and including a first input
for receiving an input audio signal, a second input for
10 receiving the supply voltage, a third input for
receiving a supply voltage rejection signal for said
supply voltage rejection circuit, and an output for
providing an output audio signal; and
a speaker connected to the output of said
15 audio amplifier; and
a power-off noise suppression circuit having
a first input for receiving the divided supply voltage
and an output for providing the supply voltage
rejection signal, said power-off noise suppression
20 circuit setting the supply voltage rejection signal
equal to the divided supply voltage during power-off of
said power supply so that a rate of decrease of the
supply voltage is greater than a rate of decrease of
the supply voltage rejection signal for reducing noise
25 in the output audio signal during the power-off.

2. An audio amplifier device according to
Claim 1 wherein said supply voltage rejection circuit
comprises at least one transistor having a conducting
voltage; and wherein the rate of decrease of the supply
5 voltage is greater than the rate of decrease of the
supply voltage rejection signal by at least the
conducting voltage.

3. An audio amplifier device according to
Claim 1 wherein said power-off noise suppression
circuit includes a second input connected to the output
thereof so that said power-off noise suppression
5 circuit is configured as a voltage follower.

4. An audio amplifier device according to Claim 1 wherein said power-off noise suppression circuit comprises:

5 a pair of first and second transistors each comprising a first conduction terminal connected to said power supply, said first transistor comprising a control terminal connected to the first input of said power-off noise suppression circuit and said second transistor comprising a control terminal connected to 10 the third input of said audio amplifier for providing the supply voltage rejection signal; and

a switch connected to said pair of first and second transistors and being operated when the divided supply voltage is greater than the supply voltage 15 rejection signal during power-off so that the supply voltage rejection signal is set equal to the divided supply voltage.

5. An audio amplifier device according to Claim 4 wherein said power-off noise suppression circuit further comprises a bias circuit connected to said switch.

6. An audio amplifier device according to
Claim 5 wherein said bias circuit comprises a resistor

7. An audio amplifier device according to Claim 4 wherein said switch comprises a transistor.

8. An audio amplifier device according to Claim 7 wherein said switch comprises an NPN transistor.

9. An audio amplifier device according to Claim 4 wherein said pair of first and second transistors each comprises a PNP transistor.

10. An audio amplifier device according to Claim 1 wherein said audio amplifier is a Class B amplifier.

11. An audio amplifier device comprising:
an audio amplifier comprising a supply
voltage rejection circuit and including a first input
for receiving an input audio signal, a second input for
5 receiving a supply voltage, a third input for receiving
a supply voltage rejection signal for said supply
voltage rejection circuit, and an output for providing
an output audio signal; and

10 a power-off noise suppression circuit having
11 a first input for receiving a divided supply voltage,
12 an output for providing the supply voltage rejection
13 signal, and a second input connected to the output so
14 that said power-off noise suppression circuit is
15 configured as a voltage follower, said power-off noise
16 suppression circuit setting the supply voltage
17 rejection signal equal to the divided supply voltage
18 during power-off so that a rate of decrease of the
19 supply voltage is greater than a rate of decrease of
20 the supply voltage rejection signal for reducing noise
21 in the output audio signal during the power-off.

12. An audio amplifier device according to
Claim 11 further comprising:

a power supply including an output for providing the supply voltage; and

a voltage divider connected to the output of said power supply for providing the divided supply voltage.

13. An audio amplifier device according to Claim 11 further comprising a speaker connected to the output of said audio amplifier.

14. An audio amplifier device according to Claim 11 wherein said supply voltage rejection circuit comprises at least one transistor having a conducting voltage; and wherein the rate of decrease of the supply voltage is greater than the rate of decrease of the supply voltage rejection signal by at least the conducting voltage.

15. An audio amplifier device according to Claim 11 wherein said power-off noise suppression circuit comprises:

a pair of first and second transistors each comprising a first conduction terminal for receiving the supply voltage, said first transistor comprising a control terminal connected to the first input of said power-off noise suppression circuit and said second transistor comprising a control terminal connected to the third input of said audio amplifier for providing the supply voltage rejection signal; and

a switch connected to said pair of first and second transistors and being operated when the divided supply voltage is greater than the supply voltage rejection signal during power-off so that the supply voltage rejection signal is set equal to the divided supply voltage.

103217-383301

16. An audio amplifier device according to Claim 15 wherein said power-off noise suppression circuit further comprises a bias circuit connected to said switch.

17. An audio amplifier device according to Claim 6 wherein said bias circuit comprises a resistor.

18. An audio amplifier device according to Claim 15 wherein said switch comprises a transistor.

19. An audio amplifier device according to Claim 18 wherein said switch comprises an NPN transistor.

20. An audio amplifier device according to Claim 15 wherein said pair of first and second transistors each comprises a PNP transistor.

21. An audio amplifier device according to Claim 11 wherein said audio amplifier is a Class B amplifier.

22. A method for reducing noise in an output audio signal during power-off of an audio amplifier device comprising an audio amplifier and a supply voltage rejection circuit, the audio amplifier device including a first input for receiving an input audio signal, a second input for receiving a supply voltage, a third input for receiving a supply voltage rejection signal for the supply voltage rejection circuit, and an output for providing the output audio signal, the method comprising:
5 turning off the power supply for powering-off the audio amplifier device;

PCT/US2008/038303

dividing the supply voltage into a divided supply voltage; and

setting the supply voltage rejection signal equal to the divided supply voltage during power-off so that a rate of decrease of the supply voltage is greater than a rate of decrease of the supply voltage rejection signal.

23. A method according to Claim 22 wherein the supply voltage rejection circuit comprises at least one transistor having a conducting voltage; and wherein the rate of decrease of the supply voltage is greater than the rate of decrease of the supply voltage rejection signal by at least the conducting voltage.

24. A method according to Claim 22 wherein setting the supply voltage rejection signal equal to the divided supply voltage during power-off is performed using a power-off noise suppression circuit.

5 that includes a first input receiving the divided supply voltage, an output providing the supply voltage rejection signal, and a second input connected to the output so that the power-off noise suppression circuit is configured as a voltage follower.

25. A method according to Claim 24 wherein the power-off noise suppression circuit comprises:

a pair of first and second transistors each comprising a first conduction terminal connected to the power supply, the first transistor comprising a control terminal connected to the first input of the power-off noise suppression circuit and the second transistor comprising a control terminal connected to the third input of the audio amplifier for providing the supply voltage rejection signal; and

10 voltage rejection signal; and

卷之三

a switch connected to the pair of first and second transistors and being operated when the divided supply voltage is greater than the supply voltage rejection signal during power-off so that the supply
5 voltage rejection signal is set equal to the divided supply voltage.

26. A method according to Claim 25 further comprising biasing the switch.

27. A method according to Claim 25 wherein the switch comprises a transistor.

28. A method according to Claim 22 wherein the audio amplifier is a Class B amplifier.